CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
January 4, 2015

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vacuum truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for January 4, 2015 07:00 to January 5, 2015 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for chlorine (Cl_2), hydrogen sulfide (H_2S), percent of the Lower Explosive Limit (LEL), oxygen (O_2), particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), toluene, xylene, and volatile organic compounds (VOCs), with instruments such as Gastec® pumps with chemical-specific colorimetric tubes, RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area and along the perimeter of the facility. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems® AreaRAE units with a ProRAE Guardian system at four locations on the fence line of the facility within the work area. Unit 10 was deployed in the cab of an excavator to monitor during waste staging and removal operations. Unit 11 was deployed on the fence line of the facility between the 120 barrel tank truck and the road to monitor Cl_2 concentrations. AreaRAEs were equipped with sensors to detect VOCs, LEL, H_2S, Cl_2, and SO_2. Unit 10 recorded three Cl_2 detections up to 0.5 ppm. The excavator operator was using an air-purifying respirator (APR) during this period. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were collocated with AreaRAE units 01, 02, 03, and 04 and data-logged to monitor PM_{10}. An additional particulate monitor was deployed in the cab of the excavator moving saturated media for waste staging and removal operations. Table 3 summarizes data-logged particulate monitoring data.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
January 4, 2015 07:00 – January 5, 2015 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Work Area	Cl_2	MR+ / MR Pro	6	0	NA	<0.1 ppm
	H_2S	MR+ / MR Pro	8	0	NA	<1 ppm
	LEL	MR+ / MR Pro	9	0	NA	<1 %
	O_2	MR+ / MR Pro	8	8	20.9	20.9 - 20.9 %
	PM_{10}	AM510/Dusttrak	5	5	0.036	0.016 - 0.045 mg/m^3
	SO_2	MR+ / MR Pro	4	0	NA	<0.1 ppm
	Toluene	Gastec 122L	1	0	NA	<0.5 ppm
	VOC	MR+ / MR Pro	10	1	0.5	0.5 - 0.5 ppm
	Xylene	Gastec 123	1	0	NA	<1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
January 4, 2015 07:00 – January 5, 2015 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Unit 01	H_2S	5342	0	NA	< 1 ppm
	LEL	5342	0	NA	< 1 %
	SO_2	5342	0	NA	< 0.1 ppm
	VOC	5342	0	NA	< 0.1 ppm
Unit 02	H_2S	5195	68	0.1 ppm	0.1 - 0.2 ppm
	LEL	5195	0	NA	< 1 %
	SO_2	5195	0	NA	< 0.1 ppm
	VOC	5195	732	0.1 ppm	0.1 - 0.3 ppm
Unit 03	H_2S	5345	0	NA	< 1 ppm
	LEL	5345	0	NA	< 1 %
	SO_2	5345	0	NA	< 0.1 ppm
	VOC	5345	3	0.2 ppm	0.1 - 0.2 ppm
Unit 04	H_2S	5174	4	0.1 ppm	0.1 - 0.1 ppm
	LEL	5174	0	NA	< 1 %
	SO_2	5174	0	NA	< 0.1 ppm
	VOC	5174	0	NA	< 0.1 ppm
Unit 10	Cl_2	1513	3	0.2 ppm	0.1 - 0.5 ppm
	LEL	1513	0	NA	< 1 %
	SO_2	1513	0	NA	< 0.1 ppm
	VOC	1513	637	0.3 ppm	0.1 - 0.5 ppm
Unit 11	Cl_2	5318	1	0.1 ppm	0.1 - 0.1 ppm
	SO_2	5318	0	NA	< 0.1 ppm
	VOC	5318	0	NA	< 0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right*

Table 3: AM510 PM_{10} Monitoring Summary[1]
January 4, 2015 07:00 – January 5, 2015 07:00

Serial No.	Location	No. of Readings	No. of Detections	Avg. Detection	Detection Range
10601072	AR01	3389	3389	0.012	0.002 - 0.156 mg/m^3
10503020	AR02	5604	5604	0.02	0.001 - 0.396 mg/m^3
10704075	AR03	3970	3943	0.017	0.001 - 0.457 mg/m^3
10704074	AR04	2081	2081	0.018	0.011 - 0.103 mg/m^3
10901027	Excavator 200D (AR10)	1898	1898	0.013	0.002 - 0.277 mg/m^3

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*

Appendix A

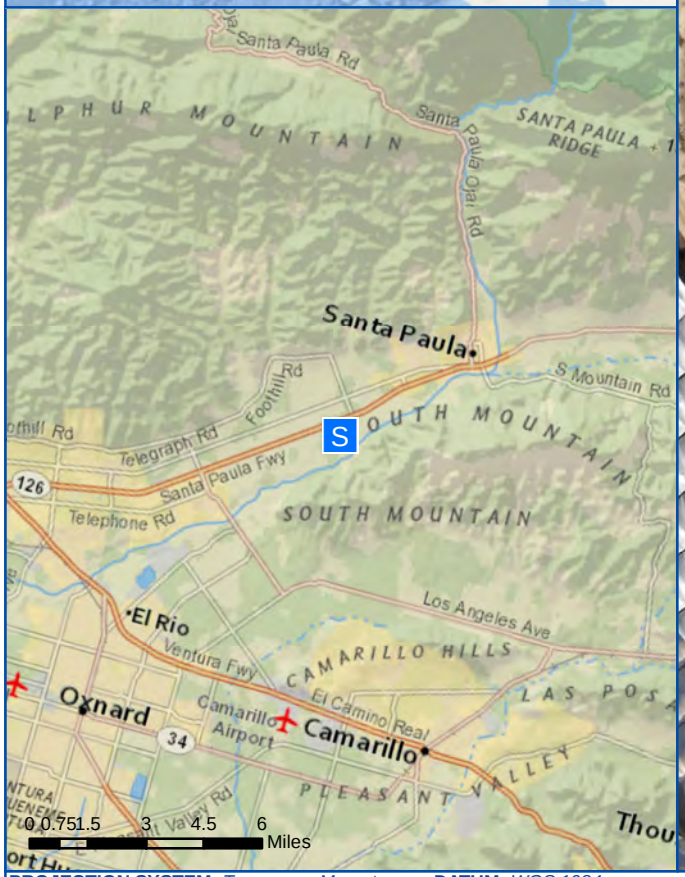
Incident Maps:

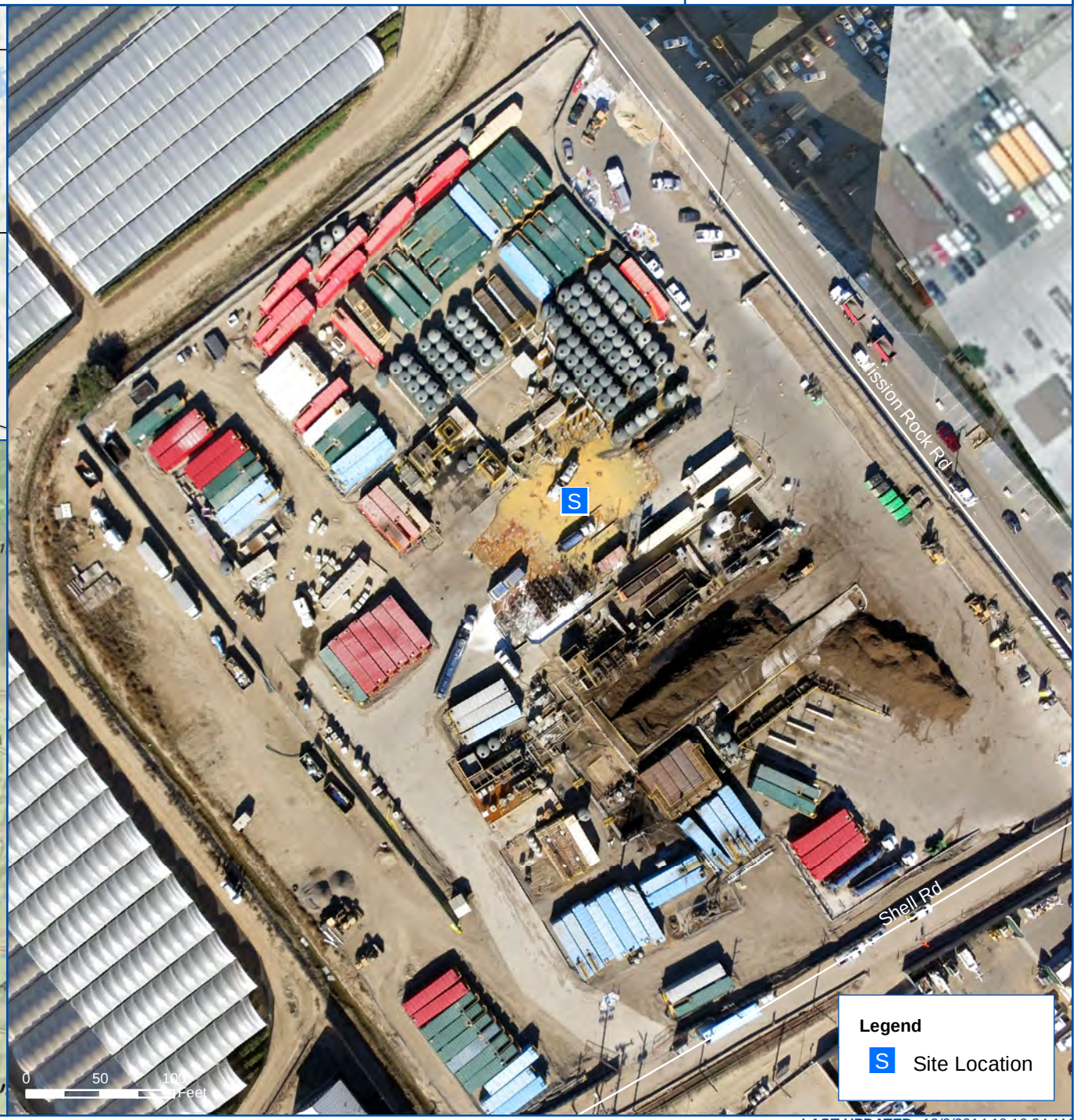
Real-Time Air Monitoring Locations and Incident Site

Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura





PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

Aerial Overview - 1/04/2015

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/4/2015 4:36:45 PM*

Manually Logged Real-Time Air Monitoring Concentrations

Cl_2 - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

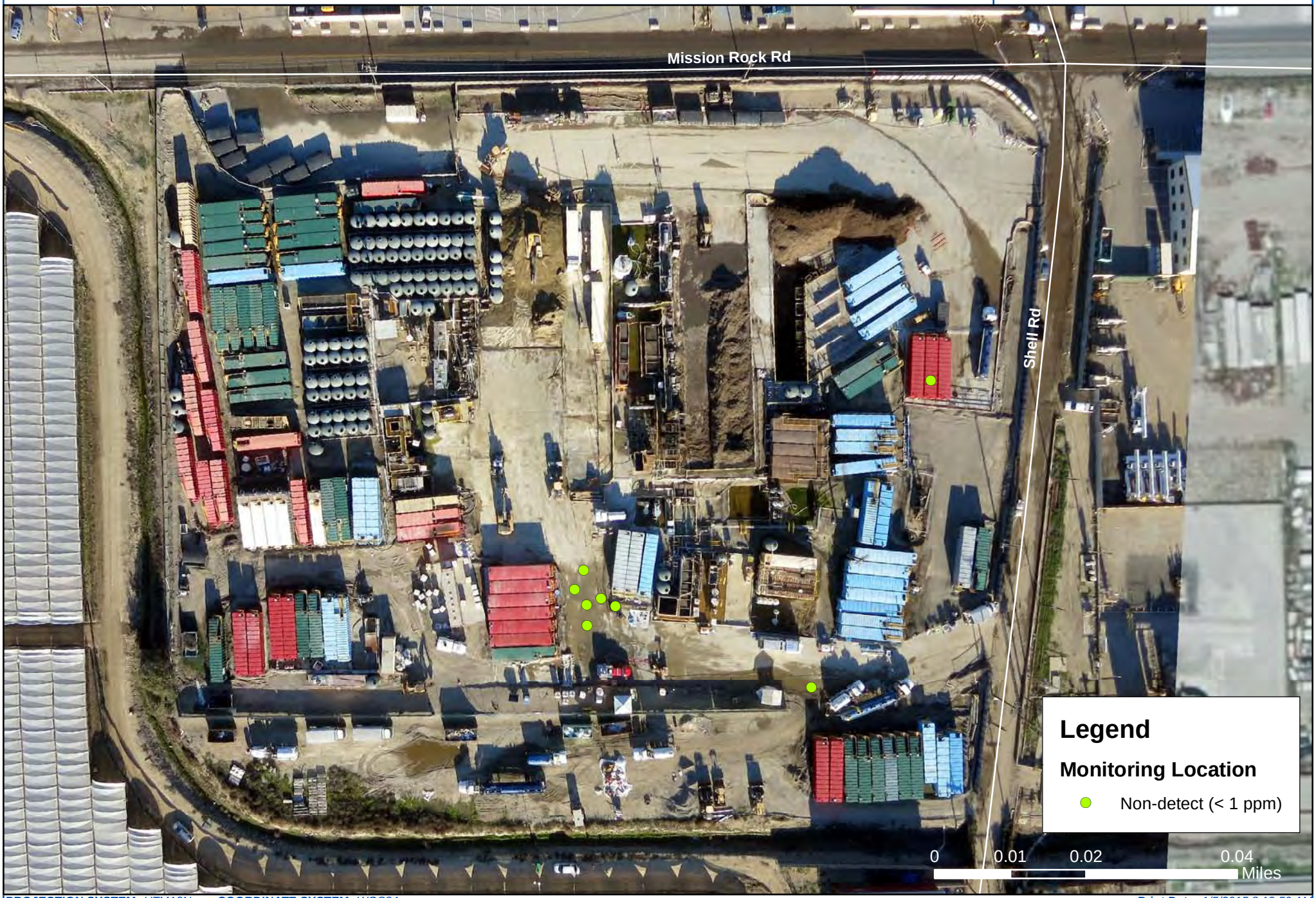
PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:09:09 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2S - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura



PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:12:59 AM*

Manually Logged Real-Time Air Monitoring Concentrations

LEL - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* COORDINATE SYSTEM: *WGS84*

Print Date: *1/5/2015 8:14:31 AM*

Manually Logged Real-Time Air Monitoring Concentrations

O_2 - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:15:46 AM*

Manually Logged Real-Time Air Monitoring Concentrations

PM_{10} - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:20:12 AM*

Manually Logged Real-Time Air Monitoring Concentrations

SO_2 - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

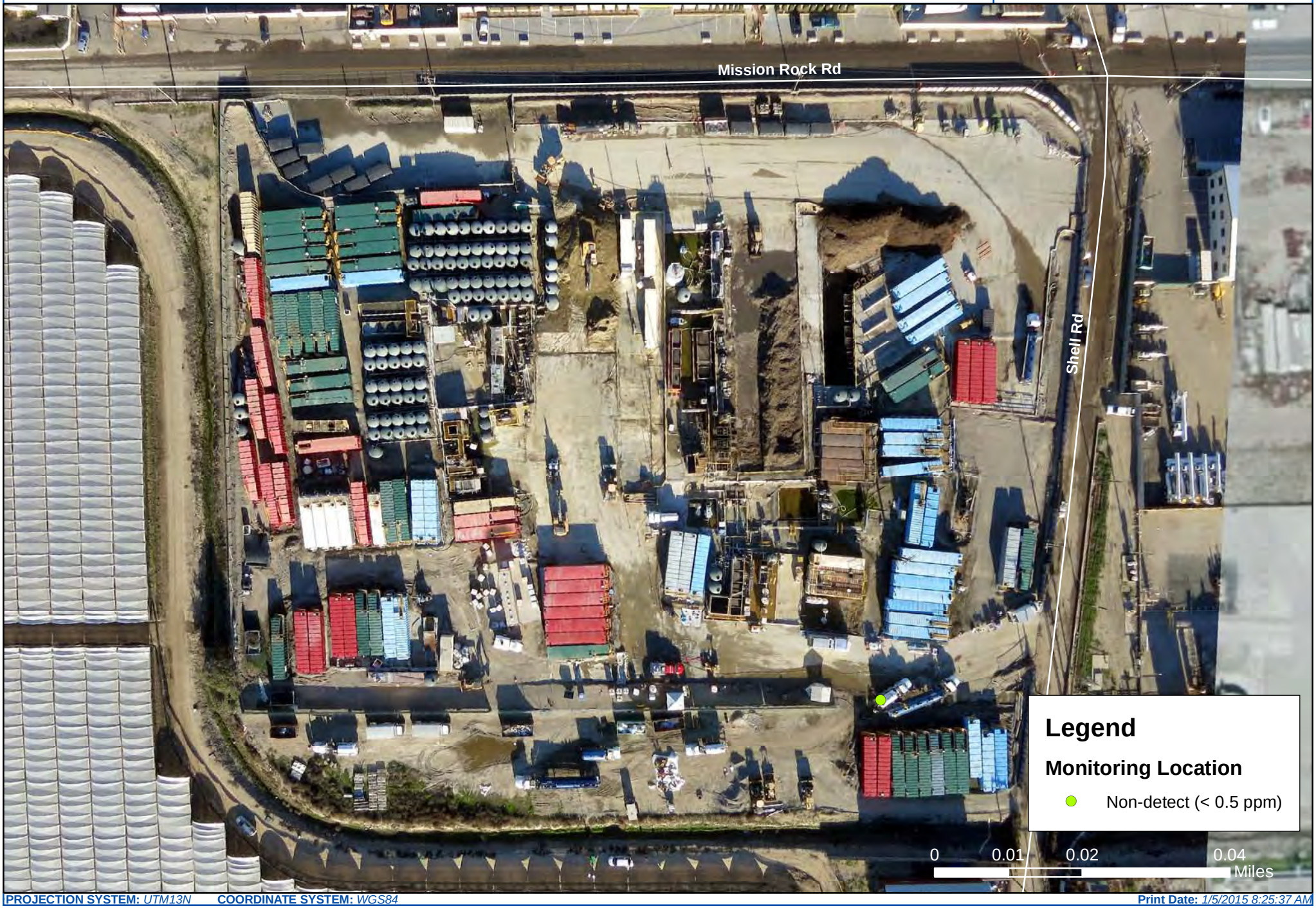
PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:21:57 AM*

Manually Logged Real-Time Air Monitoring Concentrations

Toluene - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura



PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 8:25:37 AM*

Manually Logged Real-Time Air Monitoring Concentrations

VOC - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 9:26:45 AM*

Manually Logged Real-Time Air Monitoring Concentrations

Xylene - Jan 04, 2015 07:00 to Jan 05, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/5/2015 9:24:19 AM*

Appendix B:

AreaRAE Trend Graphs, AM510 Trend Graphs, and Location Map

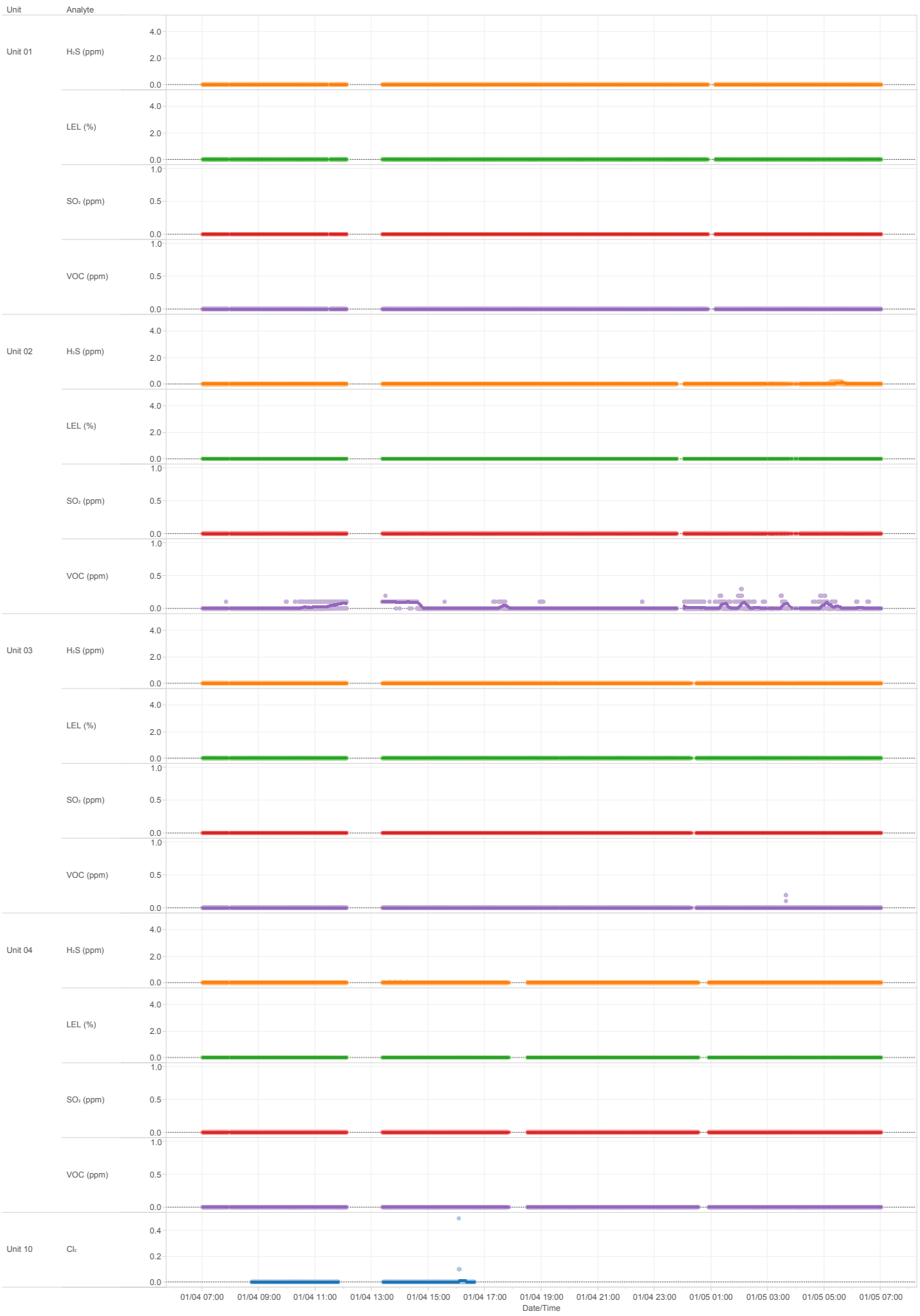
AreaRAE and AM510 Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

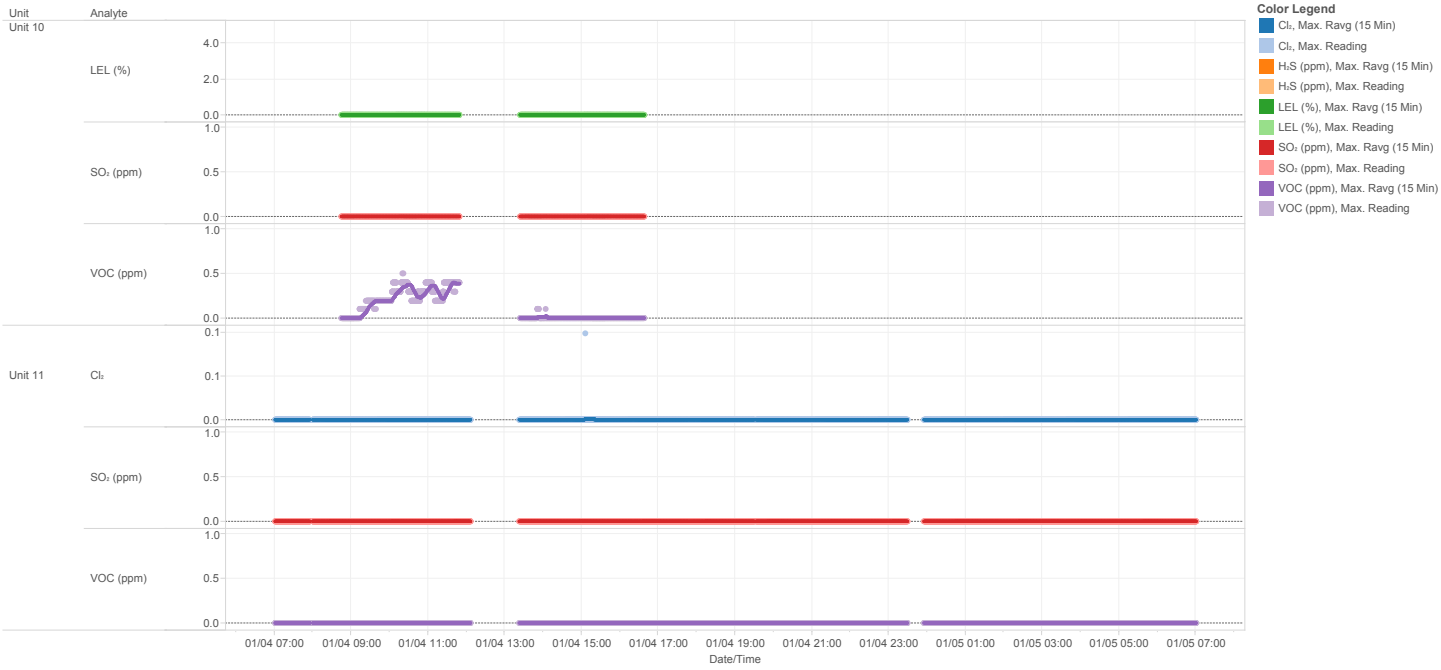
PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/4/2015 8:59:56 AM*

Patriot Environmental
AreaRAE Trend Graphs
1/04/2015 07:00 - 1/05/2015 07:00



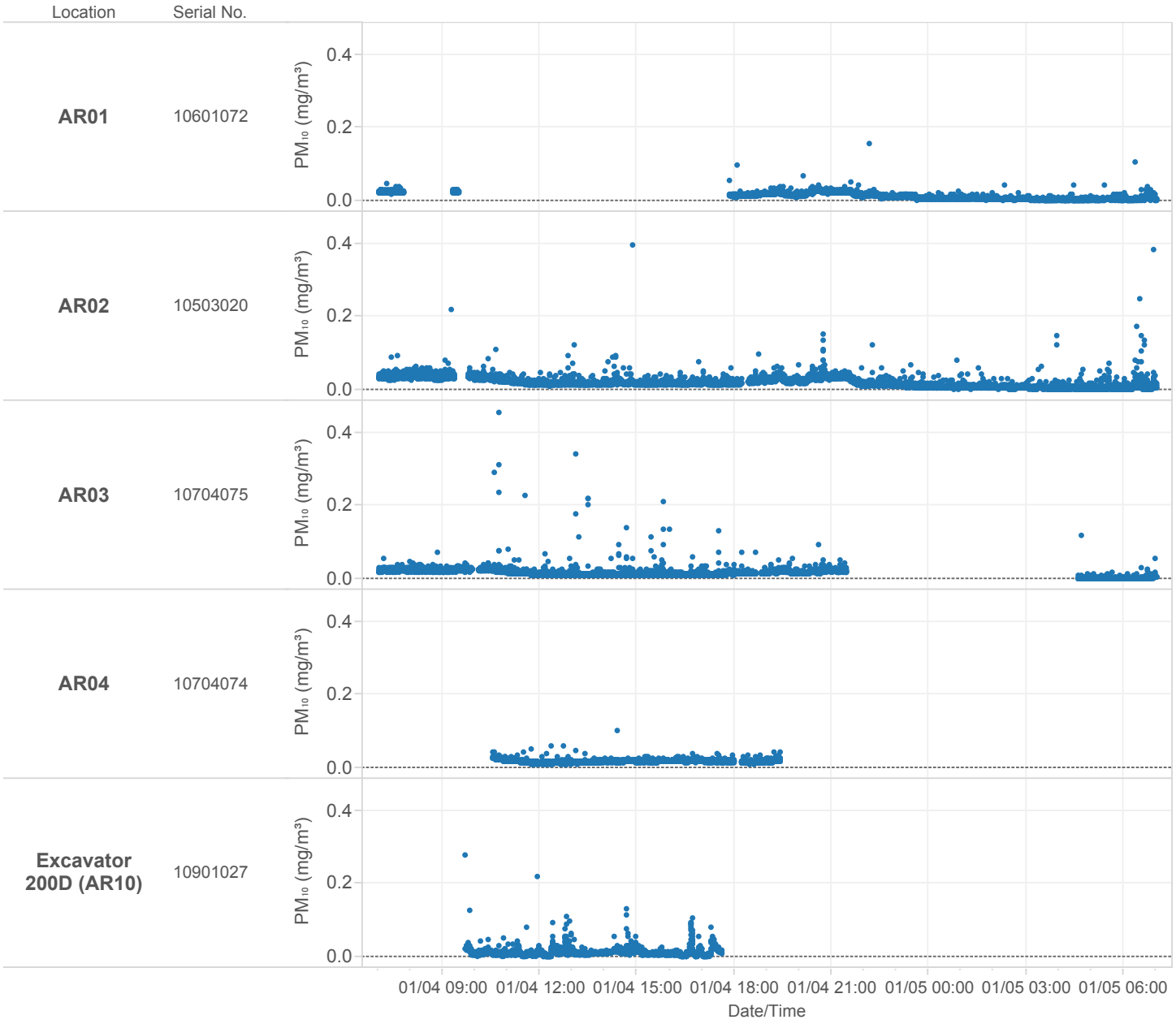
- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
AreaRAE Trend Graphs
1/04/2015 07:00 - 1/05/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
MISSION INCIDENT
Datalogged AM510 (PM_{10}) Summary
1/04/2015 07:00 - 1/05/2015 07:00



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